Contract: NAS9-13813
DRL No. T982
Line Item No. 3
DRD No. MA129T
WA 2164

COMMAND DECODER SYSTEM FINAL REPORT

31 MARCH 1976

Prepared by:

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Approved:

Project Engineer

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ABSTRACT

NASA Contract NAS9-13813 was awarded for additional hardware for use in evaluating Shuttle instrumentation, data processing and ground check-out operations. The hardware was designed and test procedures prepared under Contract NAS-9-13565. This report then describes the production and testing of an existing hardware design.

The hardware design was completed under an earlier contract. Production and test of the necessary hardware followed completion of the earlier contract. Changes were incorporated as required to incorporate improvements that were made as a result of system testing on the first contract.

The units were delivered to NASA and appear to be adequately performing their intended function.

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Introduction

Teledyne Controls entered into a contract with NASA-JSC on 3/11/74. This contract, NAS9-13813, was for additional Command Decoder hardware. The hardware was to the same specification and was to be completely interchangeable with the Command Decoder hardware designed and produced under a then existing contract, NAS9-13565.

The hardware was designed as a Shuttle compatible data acquisition/ command decoder remote terminal. The equipment was to be used in the laboratory to evaluate techniques for implementing operational instrumentation, data processing and ground checkout operations.

Procurement

Procurement of most of the necessary parts and materials started immediately after contract award. Materials for some of the Command Decoder Unit (CDU) modules were not ordered immediately due to design changes as a result of system testing on the first contract (NAS-9-13565).

By July 15, 1974, sufficient parts and materials had been received to begin releasing assemblies to production. By September 1974, all materials had been received to complete the first two CDU's. Additional parts were ordered to reflect changes as a result of additional evaluation of the first CDU's on the initial contract.

Manufacturing

Manufacturing of individual CDU circuit cards, power supplies and the main housings were scheduled to follow completion of similar assemblies on the initial NASA contract. Some assemblies were completed during late

September 1974, but most manufacturing effort started during October 1974. Manufacturing continued in a routine manner until completed in August 1975.

Testing

A test plan, production test procedures, production test fixtures and a final system acceptance test procedure were prepared and used to test all hardware on NASA Contract NAS9-13565. The same testing continued on this contract.

The first individual card tests started in late January 1975. The first complete CDU was tested during July 1975. All module tests were completed during August 1975. The last CDU was tested in December 1975.

A final test report was prepared and submitted for each individual CDU that was shipped, by serial number.

Documentation

Monthly progress reports, etc. as required by the contract were submitted in a timely manner.

Recommendations

The CDU is a redundant modular remote terminal which may be configured to meet a wide variety of specific input/output requirements. It interfaces with the data bus via a Data Bus Coupler which is compatible with Shuttle hardware. The unit should allow NASA to evaluate various system combinations and develop software for future applications. It is felt that the present unit is capable of meeting all these requirements without modification. The unit should be re-packaged if it becomes necessary to subject it to a full flight environment.